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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/831,887      | 05/23/2001  | Yasutaka Ito         | 20523US0PCT         | 8002             |

22850 7590 03/30/2004

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| EXAMINER |
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FASTOVSKY, LEONID M

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| ART UNIT | PAPER NUMBER |
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3742

DATE MAILED: 03/30/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 09/831,887             | ITO ET AL.          |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Leonid M Fastovsky     | 3742                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE \_\_\_\_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 11 February 2004.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-5,7-9,11-24,27 and 28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-5,7-9,11-24,27 and 28 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 23 May 2001 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | Paper No(s)/Mail Date. _____.   |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>12,13,15, 16</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|   | 6) <input type="checkbox"/> Other: _____.                                   |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. Claims 1-5 and 27-28 are rejected under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Kawada (5,665,260). Kawada discloses substantially the claimed invention comprising a boron nitride ceramic heater (Col. 4, line 23) for heating a semiconductor material comprising a ceramic substrate and a work-heating surface facing a work to be heated and having roughness of 0.05 to 200 micron in accordance with JIS B 0601 standard. Note that although Kawada does not directly contact the work as broadly as recited, its surface directly faces the work to be heated and thus is configured to directly face a work to be heated.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-4, 9, 21-23 and 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bogdanski et al (6,150,636).

Bogdanski discloses substantially the claimed invention including a nitride ceramic heater (Col. 6, lines 22-23), comprising a ceramic substrate 14 and a heating element 17, and a working surface having roughness of less than 100 micron (Claims 1 and 2),

which is overlapping the range of 0.05 to 200 micron. It would have been obvious to one having ordinary skill in the art to use Bogdanski's invention to have roughness of the cooking surface in the range of 0.05 to 200 micron using JIS B 0601 standard to make it extremely flat as taught by Bogdanski (Col. 6, lines 46-55). Also, Bogdanski teaches that the thickness of the ceramic substrate is between 2 and 4 mm (Col. 6, lines 26-27).

4. Claims 5, 7, 11 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bogdanski in view of Miyata (2002/0027130) or Noda et al (5,753,893).

Bogdanski teaches substantially the claimed invention but does not teach that the nitride ceramic substrate contains one of the elements selected from Na, B, Y, Li and Ca. Miyata teaches elements **Ca** and **Y** (Page. 2, paragraph 36; Page 5, paragraph 98) in a ceramic heater that is in amount less than 0.5 weight %. It would have been obvious to one having ordinary skill in the art to modify Bogdanski's invention to include elements **Ca** and **Y** in the amount not less than 0.1% by weight to accelerate wettability of ceramics as taught by Miyata (Page. 2, paragraph 36, Page 5, paragraph 98).

Noda et al also teaches a content of element **Y** to be in a range of 0.3 to 13 weight % (Claim 1). It would have been obvious to one having ordinary skill in the art to modify Bogdanski's invention to use elements **Y** or **Ca** in an amount not less than 0.1% by weight to improve the relative density and durability as taught by Noda (Col. 9, lines 22-26).

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5. Claims 8 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bogdanski in view of Miyata and further in view of Yamada et al (5,998,320). Bogdanski in view of Miyata discloses substantially the claimed features, but does not disclose that a weight of elements Na and B is not less than 0.05 ppm. Yamada et al teaches in col. 4, lines 42-49 minimizing the amount of metal and other elements belonging to Groups Ia VIIa, VIII, Ib and IIb and IIIb and IVb respectively to less than 100 ppm, which encompasses the range of not less than 0.05 ppm. It would have been obvious to one having ordinary skill in the art to modify the invention of Bogdanski in view of Miyata to use Na or B in the amount of not less than 0.05 ppm in order to control a volume of resistivity as taught by Yamada (Col. 4, lines 42-49).

6. Claims 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawada et al (5,665,260) in view of Ushikawa (6,140,256).

Kawada teaches substantially the claimed invention comprising a nitride ceramic heater for heating a semiconductor material. However Kawada does not teach that a semiconductor wafer is heated while being supported by pins at a distance of 1 micron to 5000 microns (5 mm) apart from the work-heating surface of the ceramic heater. Ushikawa discloses pins 41, 42 and 43 supporting a wafer W at a distance of from 0.2 mm to 2 mm (Col. 4, lines 30-44). It would have been obvious to one having ordinary skill in the art to modify the invention of Kawada to use supporting pins at a distance from 1 micron to 5000 micron in order to improve a process of wafers heating as taught by Ushikawa (Abstract).

7. Claims 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bogdanski et al in view of Kariya (6,452,137).

Bogdanski discloses substantially the claimed invention, but does not disclose the thermal conductivity of a ceramic substrate. Kariya discloses a thermal conductivity of a ceramic substrate of 180 W/mK (Col 4, lines 40-43). It would have been obvious to one having ordinary skill in the art to modify Bogdanski's invention to include ceramics for quick heating and cooling as taught by Kariya (Col. 4, lines 29-39) and to include a thermal conductivity in a range from 130 to 200 W/mK because it is excellent in temperature follow ability as taught by Kariya (Col. 4, lines 40-45).

9. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bogdanski in view of Miyata and Kariya.

Bogdanski in view of Miyata discloses substantially the claimed invention, but does not a thermal conductivity of a ceramic substrate. See the above discussion of Kariya for its teaching and motivation.

#### ***Response to Arguments***

10. Applicant's arguments filed 2/12/04 have been fully considered but they are not persuasive. While the work-heating surface of Kawada does not directly contact the work, the work-heating surface is oriented or turned so that it directly faces the direction

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of the work to be heated. Thus as broadly as recited, the work-heating surface is configured to directly face a work to be heated.

Many of applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonid Fastovsky whose telephone number is (703)306-5482. The examiner can normally be reached on Monday-Thursday (7:30-6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Denise Pothier can be reached on (703) 308-0265. The fax phone numbers

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for the organization where this application or proceeding is assigned are (703) 308-7764 for regular communications and (703) 308-3463 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0861.

Lmf



**DENISE POTHIER  
PRIMARY EXAMINER**